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IS 14251 (1995): Captan, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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[illegible], तकनीकी — विशिष्टि

Indian Standard

CAPTAN, TECHNICAL — SPECIFICATION

(First Reprint DECEMBER 1996)

UDC 632.951 CAP

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 1995

Price Group 2

AMENDMENT NO. 1 FEBRUARY 2007
TO
IS 14251 : 1995 CAPTAN, TECHNICAL — SPECIFICATION

(*Page* 2, *Annex* A, *clause* **A-2.2.3**, *line* 7) — Delete 'Carry out a blank titration also'.

(*Page* 2, *Annex* A, *clause* **A-2.3**) — Substitute

'Captan content, percent by mass = $\frac{(V_2 - V_1) \times 0.100\,2 \times 2.5 \times N \times 100\text{'}}{M}$

for

'Captan content, percent by mass = $\frac{[(V_2 - V_1) \times 0.100\,2 \times 2.5 \times N \times 100]}{M} - 5.142\,Y$'

(*Page* 2, *Annex* A, *clause* **A-2.3**) — Delete 'Y = Free ionic chloride content, percent by mass (*see* Annex B)'

(FAD 1)

Reprography Unit, BIS, New Delhi, India

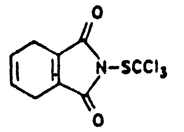
Pesticides Sectional Committee, FAD 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Pesticides Sectional Committee, had been approved by the Food and Agriculture Division Council.

Captan, technical is employed in the preparation of fungicidal formulations.

Captan is the accepted common name by the International Organization for Standardization (ISO) for N-(trichloromethylthio)-4-cyclohexene-1, 2-dicarboxymide. The empirical and structural formulae and molecular mass of captan are given below:

Empirical Formulae	*Structural Formula*	*Molecular mass*
$C_9H_8Cl_3NO_2S$		300.6

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act,* 1968 and the *Rules framed thereunder and Standards of Weights and Measures (Packaged Commodities) Rules,* 1977. However, this standard is subject to the restrictions imposed under these wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CAPTAN, TECHNICAL — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for captan, technical.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8069 : 1989	High density polyethylene (HDPE) woven sacks for packing pesticides (*second revision*)
8190 (Part 1) : 1988	Requirement for packing of pesticides: Part 1 Solid pesticides (*second revision*)
10946 : 1984	Methods of sampling for technical grade pesticides

3 REQUIREMENTS

3.1 Description

The material shall be in the form of light yellow powder, free from extraneous impurities and added modifying agents.

3.2 The material shall comply with the requirements given in Table 1.

4 PACKING

The material shall be packed in mild steel/tinplate or fibre-board containers or HDPE woven sacks (*see* IS 8069 : 1989). The containers shall also comply with the general requirements as specified in 2 of IS 8190 (Part 1) : 1988.

5 MARKING

5.1 The containers or sacks shall be marked legibly and indelibly with the following information:

a) Name of the material;
b) Name of the manufacturer;
c) Batch number;
d) Date of manufacturer;
e) Date of expiry;
f) Captan content, percent by mass (*m/m*), Minimum;
g) Net mass in kilograms; and
h) Any other information required under the *Insecticides Act*, 1968 and Rules framed thereunder and the *Standards of Weights and Measures (Packaged Commodities) Rules*, 1977.

5.2 BIS Certification Marking

The product may also be marked with the standard mark.

5.2.1 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standard.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 10946 : 1984.

Table 1 Requirements for Captan, Technical
(*Clause* 3.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of This Standard	Cl No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Captan content, percent by mass (*m/m*), *Min*	90.0	A	—
ii)	Moisture content, percent by mass (*m/m*), *Max*	1.5	—	4
iii)	Free ionic chloride (as NaCl) percent by mass (*m/m*), *Max*	2.0	B	—

ANNEX A

[*Table* 1, *Item* (i)]

DETERMINATION OF CAPTAN CONTENT

A-1 TITRATION METHOD

A-2 PRINCIPLE

Captan is hydrolyzed with dilute sodium hydroxide and the inorganic chlorine is determined by Volhard method.

A-2.1 Reagents

A-2.1.1 *Acetone* — A R grade.

A-2.1.2 *Methanol* — A R grade.

A-2.1.3 *Hydrogen Peroxide* — 30 percent (v/v).

A-2.1.4 *Sodium Hydroxide Solution* — 0.3 N.

A-2.1.5 *Silver Nitrate Solution* — 0.1 N.

A-2.1.6 *Standard Potassium Thiocyanate Solution* — 0.1 N.

A-2.1.7 *Nitric Acid* — 1.1 (v/v).

A-2.1.8 *Ferric Sulphate* — A R grade.

A-2.1.9 *Ferric Alum Solution or Ferric Nitrate Solution saturated*

A-2.1.10 *Nitrobenzene*

A-2.1.11 *Phenopthaline Indicator Solution*

A-2.2 Procedure

A-2.2.1 Weigh accurately (a quantity of the sample containing 1 g) of captan and transfer to a 250-ml volumetric flask. Add 125 ml acetone to the flask and shake for 30 seconds and shaking is continue after every 3 minutes for 15 minutes to dissolve soluble material. Add methanol upto the mark and mix thoroughly. Let insoluble material settle. Adjust the volume again, if required.

A-2.2.2 Transfer 100 ml aliquot to a suitable refluxing flask with addition of methanol as described in **A-2.2.1**. Add 50 ml sodium hydroxide solution and reflux for one hour in alkaline medium. The digestion mixture should be alkaline when the digestion is finished. After refluxing, add cautiously 5 ml hydrogen peroxide, boil for another 10 minutes. Ensure that volume does not go down below 80 ml. Add more hydrogen peroxide and boil to bring the solution practically colourless. Cool, add 10 ml nitric acid, 1 g ferric sulphate and 1 ml saturated ferric nitrate or ferric alum solution. Add from a burette 50 ml silver nitrate solution. Add 5 ml nitrobenzene, shake and titrate with standard potassium thiocyanate solution.

NOTE — A drop or two of phenopthaline indicator solution may be added at the beginning and if necessary, more sodium hydroxide solution should be added to keep the digestion mixture alkaline.

A-2.2.3 Transfer another 100-ml aliquot of the solution obtained in **A-2.2.1** to another 500-ml Erlenmeyer flask. Add 40 ml water, 10 ml nitric acid and 1 g ferric sulphate. Carry out titration under identical conditions as given in **A-2.2.2** but without refluxing. Complete the titration within two minutes. Carry out a blank titration also.

A-2.3 Calculation

Captan content, percent by mass =

$$\left[\frac{(V_2 - V_1) \times 0.100\,2 \times 2.5 \times N \times 100}{M}\right] - 5.142\,Y$$

where

V_2 = Volume, in ml, of standard potassium thiocyanate solution required for blank;

V_1 = Volume, in ml, of potassium thiocyanate solution required for sample;

N = Normality of standard potassium thiocyanate solution;

M = mass, in g, of the sample taken for the test; and

Y = Free ionic chloride content, percent by mass (*see* Annex B).

ANNEX B

[*Table* 1, *Item* (iii)]

DETERMINATION OF FREE IONIC CHLORIDE CONTENT

B-1 REAGENTS

B-1.1 Silver Nitrate Solution — 0.1 N.

B-1.2 Ferric Alum Indicator Solution

B-1.3 Standard Potassium Thiocyanate Solution — 0.1 N.

B-1.4 Dilute Nitric Acid — 10 percent (*v/v*).

B-2 PROCEDURE

Weigh about 1 g of the sample into a 250-ml Erlenmeyer flask. Add 50 ml water and 10 ml dilute nitric acid. Add 25 ml silver nitrate solution and 2 ml of the ferric alum indicator solution. Titrate against standard potassium thiocyanate solution till faint red colour is obtained. Carry out a blank titration also.

B-3 CALCULATION

Free ionic chloride content (as NaCl), percent by mass

$$= \frac{(V_2 - V_1) \times 5.846 \times N}{M}$$

where

V_2 = Volume, in ml, of standard potassium thiocyanate solution used for blank titration;

V_1 = Volume, in ml, of standard potassium thiocyanate solution required for sample;

N = Normality of standard potassium thiocyanate solution used; and

M = Mass, in g, of the sample taken for the test.

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Amendments Issued Since Publication

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